

**IN THE CLAIMS**

This is a complete and current listing of the claims, marked with status identifiers in parentheses. The following listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) A DNA chip, comprising:  
~~\_\_\_\_\_a carrier (14); and, arranged thereon,~~  
~~\_\_\_\_\_a microarray of spots, arranged on the carrier, (1)~~  
containing immobilized catcher molecules, each spot (1)  
containing a thin-film four pole~~microelectrode~~ system for the  
impedance-spectroscopic detection of binding events between  
the catcher molecules and target molecules of an analyte  
solution ~~(38)~~ applied to the spots ~~(1)~~, ~~characterized in that~~  
~~the microelectrode system is a thin-film four-pole system, the~~  
~~thin film four pole system comprising~~ including two  
polarization electrodes ~~(2, 4)~~ for generating an alternating  
electromagnetic field and two sensor electrodes ~~(8, 10)~~ for  
measuring a voltage drop in the analyte ~~(38)~~.
2. (Currently Amended) The DNA chip as claimed in claim 1,  
~~wherein characterized in that the carrier includes (14)~~  
~~comprises~~ a silicon substrate (34), on which the  
microelectrode system is integrated using thin-film  
technology.
3. (Currently Amended) The DNA chip as claimed in claim 1 ~~or~~  
2, ~~wherein characterized in that~~ at least one sensor electrode  
~~(8, 10)~~ is assigned a shielding electrode ~~(50, 52)~~, which is  
held at the same electrical potential as the sensor electrode  
~~(8, 10)~~.

4. (Currently Amended) The DNA chip as claimed in claim 3, ~~wherein characterized in that~~ the electrical potential of the sensor electrode ~~(8, 10)~~ is held at the shielding electrode ~~(50, 52)~~ by a buffer amplifier ~~(54)~~ connected to the sensor electrode ~~(8, 10)~~ and having a gain of 1.

5. (Currently Amended) The DNA chip as claimed in claim 4, ~~wherein characterized in that~~ the buffer amplifier ~~(54)~~ is integrated on the carrier ~~(14)~~.

6. (Currently Amended) The DNA chip as claimed in ~~one of the preceding claims, characterized in that~~ claim 1, wherein at least one of at least one sensor electrode ~~(8, 10)~~ and/or at least one shielding electrode ~~(50, 52)~~ are directly electrically isolated from the analyte ~~(38)~~.

7. (Currently Amended) The DNA chip as claimed in claim 1 ~~one of claims 1 to 6, wherein characterized in that~~ a sensor electrode ~~(8, 10)~~ contains pointlike individual electrodes ~~(28)~~ which are electrically connected to a buried electrode collective line ~~(26)~~ by way ~~means~~ of plated-through holes ~~(32)~~.

8. (Currently Amended) The DNA chip as claimed in claim 1, ~~one of the preceding claims, characterized in that~~ wherein the thin-film microelectrode system is embedded in a reaction layer ~~(44)~~ containing catcher molecules.

9. (Currently Amended) The DNA chip as claimed in claim 8, ~~wherein characterized in that~~ the thickness of the reaction layer ~~(44)~~ is less than 100  $\mu\text{m}$  and is correlated with the width of the electrodes or the interspaces thereof.

10. (Currently Amended) The DNA chip as claimed in claim 9, wherein the width of the electrodes is ~~being~~ approximately 1  $\mu\text{m}$ , ~~characterized in that~~ and the thickness of the reaction

layer ~~(44)~~ corresponds to approximately 5-10 times the value of the electrode width.

11. (Currently Amended) The DNA chip as claimed in claim 8 ~~or~~ 9, wherein ~~characterized in that~~ the reaction layer ~~(44)~~ is a hydrogel.

12. (Currently Amended) The DNA chip as claimed in claim 1 ~~one of the preceding claims~~, wherein ~~characterized in that~~ the thin-film four-pole system forms an interdigital current electrode arrangement with double meandering current taps.

13. (New) The DNA chip as claimed in claim 2, wherein at least one sensor electrode is assigned a shielding electrode, which is held at the same electrical potential as the sensor electrode.

14. (New) The DNA chip as claimed in claim 2, wherein at least one of at least one sensor electrode and at least one shielding electrode are directly electrically isolated from the analyte.

15. (New) The DNA chip as claimed in claim 2, wherein a sensor electrode contains pointlike individual electrodes which are electrically connected to a buried electrode collective line by way of plated-through holes.

16. (New) The DNA chip as claimed in claim 2, wherein the thin-film microelectrode system is embedded in a reaction layer containing catcher molecules.

17. (New) The DNA chip as claimed in claim 9, wherein the reaction layer is a hydrogel.

18. (New) The DNA chip as claimed in claim 2, wherein the thin-film four-pole system forms an interdigital current electrode arrangement with double meandering current taps.